An Overview of the Placer Mining Industry in Atlin Mining Division

Province of British Columbia

Ministry of Energy, Mines and Petroleum Resources

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HISTORY OF THE PLACER MINING INDUSTRY
ATLIN MINING DIVISION

The first discovery of placer gold in British Columbia was made at the mouth of the Nicoamen River in 1857. It initiated the 1858 rush to the lower Fraser River at Yale and points upstream. Discoveries made in the Cariboo area on the Quesnel River, and in the vicinity of Barkerville came rapidly. By 1872, activity in the Cariboo area had cooled, and prospecting parties were searching for new deposits. Gold was found on Dease and Thibert Creeks in the Cassiar area in 1873. In 1874, gold was discovered farther north at Sayyea Creek in the southern part of Yukon.

No significant new discoveries were reported in northern British Columbia between 1873 and 1898, when gold was discovered on Pine Creek in the Atlin area by Messrs. Miller and McLaren. The facts that the journey to the area was made in winter and the discovery made in January suggest that the discoverers possessed information which led them to the creek and the deposit. The knowledge of the occurrence may have been general, but the occurrence might not have been thought worth investigating until after the richness of the newly discovered Klondike gold fields became apparent.

The news of the discovery on Pine Creek reached Victoria in August 1898. Thousands of prospectors then made their way to the Atlin area. That season, most of the other gold-bearing creeks in the area were also discovered. Several thousand miners were living in a tent camp which extended along Pine Creek over six miles between Atlin and Discovery by autumn.

Most of the shallow, easily worked deposits were worked out during the first few seasons by holders of individual claims and leases. The difficulty of working deep ground, and of disposing of tailings on 100 foot claims forced many miners to leave. Those who remained were able to group several claims to be worked together. Supplies of water were obtained to allow work on a large scale. Ditches to bring water to Pine Creek for hydraulic mining were begun in 1900, and put into use in 1902. Hydraulic mining was begun that same year on Birch and Spruce Creeks, although the Spruce Creek venture was unsuccessful, and on McKee Creek in 1903. A dam was built at the mouth of Surprise Lake in 1905 to increase the storage capacity of the lake, and to provide additional water for hydraulicking. Hydraulic mining operations were active on several creeks for 25 years or more.

Hydraulicking is the method by which most of the mining in the Atlin area was done. More than one-third of the total gold recovered was recovered by hydraulic operations. When production from Spruce Creek, which came largely from underground workings and surface reworkings of tailings from underground workings is excluded, more than two-thirds of the gold recovered was recovered by hydraulic mining operations.

Mechanized mining was begun in 1904. A dredge was used unsuccessfully in 1904 and 1905 on Pine Creek. About the same time, a second dredging operation near the head of Spruce Creek, and a steam shovel operation on the same creek were also not successful. A steam shovel operation on Pine Creek in 1906 and 1907 was, however, successful.

Placer mining activity in the Atlin area declined gradually as the shallow ground was worked out, until in 1930 production was only one-tenth of what it was in 1898. After 1934, the abrupt increase in the price of gold, followed by devaluation of the dollar caused renewed activity in the area. A steam-shovel operation on Spruce Creek, and underground mines on Spruce, Otter, McKee, and Ruby Creeks were active. Bulldozers were introduced to placer mining in the area in 1940 on Pine Creek.

Placer mining activity declined again after 1944. Intermittent underground mining of the deeply buried deposits of central Spruce Creek provided most of the gold recovered. By 1956, production had declined to less than 2,000 ounces per year. By 1966, it had declined further to less than 100 ounces per year.

The rising price of gold in the early 1970's created new interest in placer mining. As the price continued to rise during the late 1970's, staking and mining activity increased accordingly. Underground workings were re-opened, and many bulldozer and drag-line open cut operations were begun. Activity peaked in 1980 and 1981, and declined in 1982 after the decline in the price of gold during 1981 and 1982.

While placer mining activity in the Atlin Mining Division was centered on the Atlin area, prospecting was done in other parts of the division. Gold was found on Squaw (Dollis) Creek in 1927. The creek, which is notable for its coarse grave and large boulders, has comparatively shallow gravel. It was worked by hand in the years following its discovery. Bulldozer operations have been active on the Yukon portion of the creek since the mid 1970's. The gold recovered from Squaw Creek is unusually coarse.

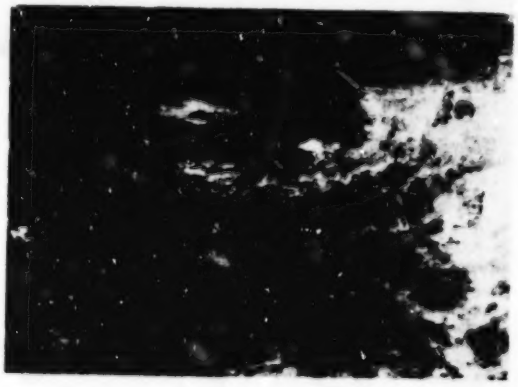

Figure 1: This large wooden dam on upper Boulder Creek impounded water for hydraulic mining on the creek between 1927 and 1941.

AN OVERVIEW OF THE PLACER MINING INDUSTRY IN ATLIN MINING DIVISION 1978 to 1982

by
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Intense new interest, rapid growth, and finally, economic reassessment were characterized in the placer mining industry in British Columbia from 1978 to 1982. This discussion pertains mainly to the Atlin Mining Division, which is adjacent to, and serviced from Yukon. The watercourses along which placer deposits occur in the Atlin Mining Division drain into Yukon. Some data for all of British Columbia are included.

Staking Activity

Placer staking activity in British Columbia from 1978 to 1982 was at a higher level than in years previous to that period. The counts of new leases staked in the Atlin Mining Division, and the total counts of new leases staked in the province each year from 1972 to 1982 are listed in Table 1. Also listed are the counts of placer leases in good standing in the Atlin Mining Division each year from 1977 to 1982.

Table 1: Counts of Placer Leases in Atlin Mining Division and British Columbia, 1972 - 1982

	Atlin Mining Division		British Columbia	
Year	New Leases	Good Standing	New Leases	Good Standing
1972	65	+	284	+
1973	113	+	547	+
1974	41	+	401	+
1975	5	+	120	+
1976	15	+	289	+
1977	19	176	146	+
1978	17	189	397	+
1979	181	270	970	+
1980	370	586	763	+
1981	238	845	1946	+
1982	+	880	1441*	+

\+ not available
* preliminary figure

The cause of the increased staking activity between 1978 and 1982 was the increased price of gold. Although the counts of new leases staked in British Columbia do not appear as overwhelming as do those in Yukon due to their smaller numbers, the difference in size of placer dispositions in British Columbia and Yukon means that more ground was staked in the province than in the territory. The count of leases in good standing in the Atlin Mining Division increased by almost five times during the period 1978 to 1982, while the amount of ground held in good standing in Yukon during the same period increased by only three times.

Map areas having placer leases on 1:50,000 scale maps are indicated on Figure 1. Reductions of 1:250,000 scale maps of these areas showing the distribution of leases are included in the second section of this report.

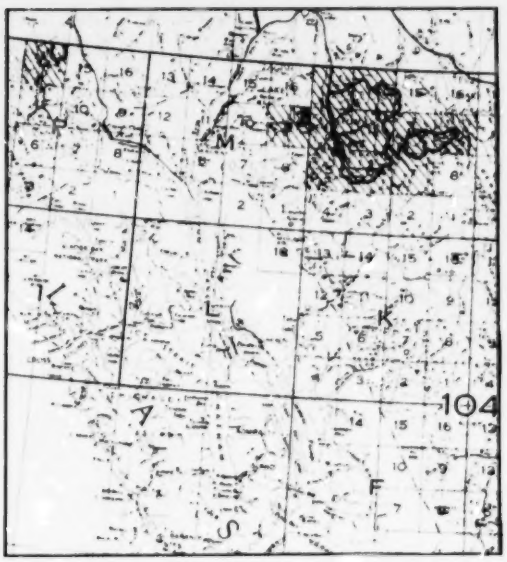


Figure 1: Map areas in which 1:50,000 scale maps have placer leases are shaded on the index map. Designated placer areas are outlined.

Mining Activity

Placer mining activity in the Atlin Mining Division increased along with staking activity during the period 1978 to 1982. Incomplete records, and a lack of field examinations of placer mining operations between 1978 and 1981 make it difficult to provide quantitative information about the placer mining industry during those years. The counts of mining operations and employees in Table 2 are "best guesstimates" based on available information.

Table 2: Mining Activity in Atlin Mining Division, B.C., 1978 - 1982

Year	Count of Mining Operations	Count of Employees
1978	12	24
1979	20	55
1980	35	102
1981	40	112
1982	31	78

Map areas having placer mining operations on 1:50,000 scale maps are indicated on Figure 2. Reductions of 1:250,000 scale maps of these areas showing the locations of the placer mining operations, and descriptions of the operations are included in the second section of this report.

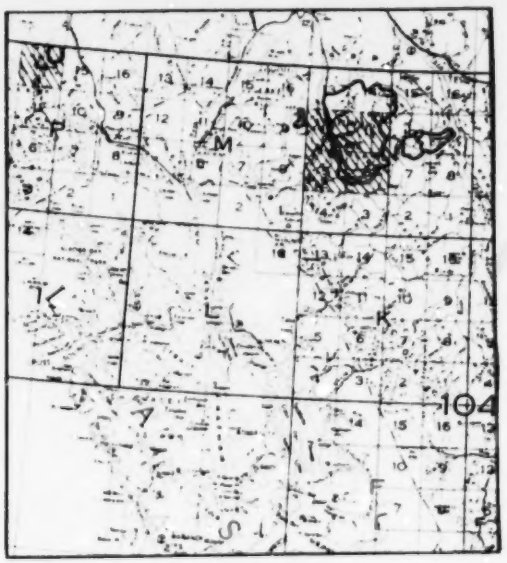


Figure 2: Map areas in which 1:50,000 scale maps have placer mining operations are shown on this index map. Designated placer areas are outlined.

Placer Gold Production

The recorded production of gold from Atlin Mining Division deposits since 1898 has been 615,234 ounces (19,135,618 grams) valued at $21,327,400. If all the production had brought the price at the date of this report, approximately $500. U.S. per ounce, it would have been valued at $375,142,590.

Placer gold recovered from creeks in the Atlin Mining Division has finenesses ranging from 743 to 890. A list of finenesses reported for gold from Atlin Mining Division creeks is given in Table 3.

The recorded production of gold in Table 4 is based on figures supplied by the Gold Commisioner in the area between 1898 and 1925, and on figures supplied by the Provincial Mineralogist or Mining Statistician since 1925. In recent years, figures supplied by the Mining Statistician have been based on responses to questionnaires concerning gold recovery mailed to persons thought to be placer mining. Such figures are incomplete. For example, in 1973 there were 8 placer mining operations employing 14 people in the Atlin Mining Division, but production for the year was reported to be nil. Production figures, especially those for years after 1925, therefore indicate only minimum production.

Production records for the period 1898 to 1945 are available in some detail. Table 5 indicates that Spruce, Pine, Boulder, Ruby, and McKee Creeks have been the sources of the largest amounts of gold in the the Atlin Mining Division. Birch, Boulder, McKee, Otter, Pine, Spruce, and Wright Creeks have been the most constant sources of gold.

Table 3: Fineness of Atlin Placer Gold

Creek	Fineness
Boulder Creek	743-794
McKee Creek	831-834
O'Donnel River	805-807
Otter Creek	807-812
Pine Creek	806-818
Ruby Creek	800-808
Spruce Creek	809-890
Squaw (Dollis) Creek	834
Wright Creek	802-814

Table 5: Placer Gold Production, Atlin Mining Division Creeks, 1898 to 1945

Creek	Production ounces	grams
Birch Creek	12,438	386,859
Boulder Creek	61,719	1,919,646
Burdette (Jasper) Creek	14	435
Bull Creek	1,308	40,683
Chehalis (Lincoln) Creek	5	156
Consolation Creek	32	995
Cracker Creek	26	809
Davenport Creek	5	156
Dominion Creek	14	435
Fox Creek	28	871
Gold Run Creek	183	5,692
Graham Creek	123	3,826
Horse Creek	12	373
Jamieson Creek	14	435
Little Spruce Creek	13	404
McKee Creek	44,019	136,912
O'Donnel River	6,455	200,770
Otter Creek	22,135	688,465
Pine Creek	129,181	4,017,917
Rose Creek	59	1,835
Ruby Creek	55,338	1,721,178
Slate (Feather) Creek	11	342
Snake Creek	36	1,120
Spruce Creek	254,858	7,926,848
Squaw (Dollis) Creek	3,257	101,302
Volcanic Creek	155	4,821
Willow Creek	1,296	40,309
Wilson (Slate) Creek	1,571	48,863
Wright Creek	13,698	426,049

Table 4: Placer Gold Production From Atlin Mining District, British Columbia

Years	Gold Production Atlin District Crude Ounces (grams)	Value $	Gold Production British Columbia Crude Ounces (grams)	Value $	Atlin Production as a % total B.C. Production
1856-1860	-	-	267,560 (8,321,918)	4,548,615.	0.0
1861-1865	-	-	968,455 (30,121,855)	16,463,639.	0.0
1866-1870	-	-	625,160 (19,444,351)	10,627,880.	0.0
1871-1875	-	-	531,510 (16,531,555)	9,035,683.	0.0
1876-1880	-	-	409,290 (12,728,591)	6,973,919.	0.0
1881-1885	-	-	249,490 (7,766,108)	4,244,977.	0.0
1886-1890	-	-	193,970 (6,033,068)	3,297,450.	0.0
1891-1895	-	-	121,910 (3,791,766)	2,072,667.	0.0
1896-1900[1]	42,445 (1,320,166)	721,132.	254,360 (7,910,737)	4,324,516.	16.7
1901-1905[2]	88,829 (2,762,868)	1,398,288.	305,200 (9,492,635)	5,188,260.	27.0
1906-1910	75,092 (2,335,586)	1,237,661.	202,380 (6,296,625)	3,440,600.	36.0
1911-1915	75,967 (2,362,801)	1,384,601.	166,270 (5,171,495)	2,826,500.	49.0
1916-1920	61,467 (1,911,888)	1,043,179.	112,060 (3,486,780)	1,904,600.	54.8
1921-1925	36,163 (1,862,571)	579,273.	101,366 (3,152,164)	1,722,862.	33.6
1926-1930[3]	15,187 (472,361)	256,215.	54,465 (1,694,024)	925,904.	27.7
1931-1935[4]	47,609 (1,480,782)	1,169,697.	117,614 (3,658,148)	2,859,810.	40.9
1936-1940	90,807 (2,824,370)	2,677,728.	244,114 (7,592,677)	7,194,680.	37.2
1941-1945	71,428 (2,221,625)	2,294,006.	115,301 (3,586,207)	3,650,571.	62.0
1946-1950	18,907 (588,064)	576,116.	80,050 (2,489,795)	2,389,387.	24.1
1951-1955	45,166 (1,404,113)	1,307,275.	71,860 (2,236,439)	2,072,478.	63.1
1956-1960	6,999 (217,689)	195,426.	23,868 (742,366)	666,702.	29.6
1961-1965	3,571 (111,068)	104,798.	14,059 (437,277)	412,236.	25.6
1966-1970	201 (6,251)	5,857.	3,986 (123,976)	115,760.	5.1
1971	4 (124)	161.	177 (5,505)	4,647.	3.0
1972	66 (2,052)	1,868.	691 (21,492)	26,905.	6.9
1973	-	-	3,831 (119,155)	311,524.	0.0
1974	1,210 (37,634)	194,162.	1,452 (45,161)	232,512.	83.5
1975	596 (18,537)	98,205.	1,406 (43,730)	232,204.	42.3
1976	269 (8,366)	38,381.	838 (26,064)	115,613.	33.2
1977	901 (28,023)	189,278.	1,484 (46,156)	289,075.	65.5
1978	107 (3,328)	26,880.	1,174 (36,514)	295,001.	9.1
1979	1,908 (59,344)	763,144.	6,884 (214,113)	2,649,918.	28.8
1980	1,348 (41,926)	922,991.	9,006 (280,113)	6,213,376.	14.9
1981	3,551 (110,446)	1,702,439.	9,379 (291,715)	4,540,289.	37.5
1982	•	•	•	•	•
Total (to 1981)	**765,738 (23,194,689)**	**21,327,488.**	**5,271,730 (163,966,689)**	**111,888,461.**	**19.1**

1. There are no production records for 1896 and 1897. The discovery of placer gold in the Atlin area was made in 1898.
2. There are no production records for 1901 for any creek except Gold Run, Otter, Spruce, Volcanic, and Willow Creeks.
3. Squaw (Delta) Creek was discovered in 1927. There are no production records for it for 1929 or 1930.
4. Wide swings in production from year to year might be explained by the "unassigned" category in production records. Gold from undetermined localities in the province is included in this category. If gold from the Atlin District was included in this category in some years, and in the Atlin District category in other years, apparent variations in production would result.

• Production figures for 1982 are not yet available.

P. Ford (1)
J. Florence 104 N 12
Spruce Creek 59° 38'N, 133° 36'W
1980, 1981, 1982

This property is situated along the right limit of Spruce Creek, just above its confluence with Pine Creek. It lies over a former channel of Spruce Creek.

Mining was done on the property in 1979 or earlier. In 1980, P. Ford worked with three other people using a 235 backhoe, and two 980B loaders. They mined a cut 300 metres (1,000 feet) long and 30 metres (100 feet) wide. The material mined was processed through a triple-deck screening unit and pulsating sluices with a capacity of 45 cubic metres (60 cubic yards) per hour. Two settling ponds of 30 metres (100 feet) square each were used to treat the sluicing water. Work continued in 1981 with one 966 loader, and the screening unit and sluices used in 1980. In 1982, J. Florence and one employee worked at the property for part of the season. They used one bulldozer and a 966 loader to mine, and processed approximately 150 cubic metres (200 cubic yards) of material a day through a small trommel and metal sluice box. No stripping was done, as the workings were on old tailings.

R. Cofer (2)
Spruce Creek 104 N 12
1982 59° 35'N, 133° 34'W

This property is situated along the right limit of Spruce Creek, above its confluence with Pine Creek.

R. Cofer and one employee mined in 1982, using a D9 bulldozer, and 950 loader with 2.3 cubic metre (3 cubic yard) bucket. The material mined was processed through a trommel, and sluiced. Mining rates were approximately 150 cubic metres (200 cubic yards) per day.

F. Madigan (3)
Spruce Creek 104 N 12
1981, 1982 59° 35'N, 133° 36'W

This property is situated along the right limit of Spruce Creek, above its confluence with Pine Creek.

Mr. Madigan worked alone in 1981 and 1982, using a John Deere 350 tracked loader with .6 cubic metre (.75 cubic yard) bucket, and a John Deere 93A backhoe with .2 cubic metre (.25 cubic yard) bucket. In 1981, he sluiced approximately 9 cubic metres (12 cubic yards) daily through a hand operated testing unit. His sluicing rate in 1982 was approximately 40 cubic metres (50 cubic yards) per day.

R. Cattermole (4)
R. Hill 104 N 12
L. Mear 59° 34'N, 133° 35'W
Atlin Mountain Mining
Spruce Creek
1981, 1982

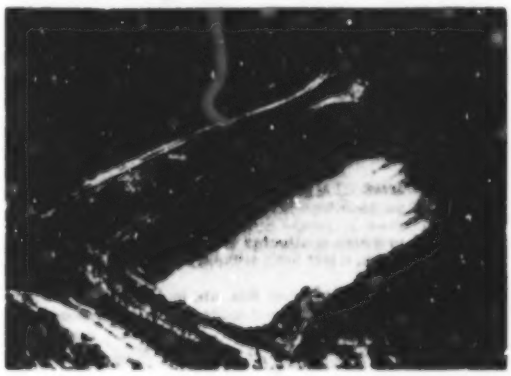
This property is situated along the right limit of Spruce Creek, above its confluence with Pine Creek.

R. Cattermole and R. Hill worked at this site for two months during 1981 doing stripping and sluicing. L. Mear also worked at the site for one month during 1981. In 1982, Atlin Mountain Mining moved downstream from their 1981 workings to mine at this location. Three people worked for 11 weeks using a 950 loader, and a backhoe with 1.1 cubic metre (1.5 cubic yard) bucket to mine approximately 30,000 cubic metres (4,000 cubic yards) of material. The material mined was processed through a three channel metal sluice at a rate of approximately 375 cubic metres (490 cubic yards) per day. One settling pond was used to treat the sluicing water.

A. Irving (5)
Spruce Creek 104 N 12
1981, 1982 59° 37'N, 133° 34'W

This property is situated along Spruce Creek above its confluence with Little Spruce Creek.

A. Irving mined at the property in 1981 and 1982, and may also have been active there prior to 1981. He and 6 employees used a D8 bulldozer, a backhoe with 1.5 cubic metre (2 cubic yard) bucket, a dragline with 1.5 cubic metre (2 cubic yard) capacity, and two 12 cubic metre (16 cubic yard) capacity dump trucks to mine. The material mined was processed through a "Ross" sluice box with 765 cubic metre (1,000 cubic yard) per day capacity. Water for sluicing was gravity fed through a 35 cm (14 inch) diameter pipeline, and was retained after sluicing in two settling ponds. All the material mined was sluiced. In 1982, sluicing was done for 7 weeks. Approximately 50,000 cubic metres (65,000 cubic yards) of material were mined and processed.



View of narrow, steep-sided Spruce Creek valley at site of Irving operation. The deep cut is visible in the background. In the foreground, the cut is being used as a settling pond.

W. Fell **(6)**
Spruce Creek **104 N 11**
1982 **59° 33'N, 133° 29'W**

This property is situated along the left limit of Spruce creek above its confluence with Dominion Creek.

W. Fell moved to this property in 1982 after working at a site approximately 900 metres (3,000 feet) upstream along Spruce Creek in 1981. He worked with one other person, using a 955 loader, and a 1.5 cubic metre (2 cubic yard) backhoe. They mined approximately 40,000 cubic metres (52,500 cubic yards) of material. All the material mined was processed through a standard metal sluice box. Water used in sluicing was allowed to settle in two ponds.

W. Fell **(7)**
Spruce Creek **104 N 11**
1981 **59° 33'N, 133° 28'W**

This property is situated along the left limit of Spruce Creek, above its confluence with Rant Creek.

W. Fell worked with one other person using a D7 bulldozer, and a 225 backhoe during 1981. All material mined was processed through a sluice-box of 750 cubic metres (1,000 cubic yards) per day capacity.

Atlin Mountain Mining **(8)**
Spruce Creek **104 N 11**
1981 **59° 32'N, 133° 26'W**

This property is located along the central reaches of Spruce Creek in the area of a former channel joining Otter Creek with Spruce Creek.

Atlin Mountain Mining worked at this property in 1981, using a 950 loader, and a backhoe with 1.1 cubic metre (1.5 cubic yard) bucket.

Y. Trudeau **(9)**
Dominion Creek **104 N 12**
1980 **59° 31'N, 133° 31'W**

This property is situated along the upper reaches of Dominion Creek, a left limit tributary of Spruce Creek.

Y. Trudeau worked at this site in 1980, using a John Deere 350 backhoe/front-end-loader. The work was done to test and evaluate the property.

Eldorado McKee Mining **(10)**
McKee Creek **104 N 5**
1980, 1981, 1982 **59° 28'N, 133° 32'W**

This property is situated on McKee Creek, just below the mouth of Eldorado Creek. Deposits being mined are mainly tailings from early hydraulic mining operations at the site. Previously unmined deposits along the valley walls of McKee Creek consist of more than 30 metres (100 feet) of glaciofluvial deposits, with discontinuous horizons of sand, silt, and laminated clay. Three metres (10 feet) or less of pre-glacial gravel are preserved under the glaciofluvial deposits. Bedrock is altered. The gradient of McKee Creek is steep at this site.

View to southwest downstream along McKee Creek. The steep faces of early hydraulic mining cuts are visible along both sides of the creek. The present operation of Eldorado McKee Mining is in the fore-ground, while the operation of ABC Mining is in the centre of the picture. Atlin Lake is in the background.

Eldorado McKee Mining worked at this property during 1980, with five or six people using a D8K bulldozer, and a 966C bulldozer. A "Deracker" unit was used to remove coarse material prior to sluicing, as cobbles and boulders make up a large proportion of the material mined. Material less than 5 cm (2 inches) in diameter was sluiced in an 80 cm (32 inch) wide sluice box. Two settling ponds were used to treat sluicing water. Work continued at the property in 1981. A Terex loader with 3.5 cubic metre (4.5

cubic yard) bucket was used for mining. In 1982, six employees working on two shifts mined with a D8 bulldozer, and a 980C loader. The "Derocker" and a three channel sluice box with one channel for pebbles from 2 to 5 cms (.75 to 1 inch) in diameter, and two channels for grains less than 2 cm (.75 inches) in diameter were used to process the material. Sluicing water was impounded in two settling ponds.

Gold from this property is reported to have a fineness of 885.

J. Williams (11)
ABC Mining 104 N 5
McKee Creek 59° 28'N, 133° 33'W
1981, 1982

Deposits being mined at this property consist of tailings from old hydraulic workings at the site, and from underground workings active during the 1970's. The underground workings are reached by an adit on the right limit of the creek at its present level. They follow a thin horizon of gold-bearing pre-glacial gravel buried beneath 30 metres (100 feet) or more of glaciofluvial outwash deposits.

J. Williams worked at the property in 1981, and may have done some work there in previous years. In 1982, ABC Mining used a D7F bulldozer, and a 966C loader to mine approximately 60,000 cubic metres (78,500 cubic yards) of material. It was processed using a "Derocker", and three channel sluice box.

R. Fredrickson (12)
Wilson Creek 104 N 6
1981, 1982 59° 21'N, 133° 28'W

This property is situated on Wilson Creek (formerly called Slate Creek) approximately 2 km (1.25 miles) above its confluence with O'Donnel River.

R. Fredrickson carried out hand-mining operations at this site for several weeks during the 1981 and 1982 mining seasons.

O. Anderson (13)
Burdette Creek 104 N 6
1980 59° 22'N, 133° 27'W

Deposits exposed on Burdette Creek consist of glaciofluvial gravel with abundant coarse boulders. Evidence of early mining activity on the creek include numerous adits, and wrecked cabins.

Mr. Anderson did exploratory work during 1980 on old tailings on this left limit property.

M. Sherman (14)
Wilson Creek 104 N 6
1980, 1981, 1982 59° 24'N, 133° 23'W

This property is situated along the left limit of the middle reaches of Wilson Creek (formerly called Slate Creek).

Mr. Sherman carried out exploratory work at this site in 1980, using a small backhoe and a 50 cm (20 inch) wide sluice box. He continued work in 1981 and 1982, using the backhoe and a small bulldozer. In 1982, he sluiced approximately 15 cubic metres (20 cubic yards) of material a day. His stripping to sluicing ratio was 2:1.

Turner Energy & Resources Ltd. (15)
Bull Creek 104 N 6
1981, 1982 59° 29'N, 133° 08'W

This property is situated on Bull Creek, approximately 2250 metres (7,500 feet) upstream from its confluence with O'Donnel River. Deposits being mined lie along the right limit of the Creek.

Turner Energy & Resources Ltd. carried out a testing program at the propety in 1981 in which a D8K bulldozer and a 518 loader were used to mine approximately 11,000 cubic metres (14,000 cubic yards) of material. There were 4350 grams (140 ounces) of gold recovered. Tests suggested, however, that considerable fine gold was lost. Mining was done in 1982 with a D6 bulldozer, and loader with 3 cubic metre (4 cubic yard) bucket. The stripping ratio was approximately 2:1, and the sluicing rate was 375 to 450 cubic metres (500 to 600 cubic yards) of material per day. Two small settling ponds of 40 square metres (425 square feet) each were used to treat the sluicing water.

Drilling to evaluate a "deep lead" on the property was also done in 1982. The buried channel lies on the left limit of the present channel, approximately 150 metres (500 feet) from it. Earlier work including seismic surveys and drilling has outlined a channel 2150 metres (7,000 feet) long and 120 to 150 metres (400 to 500 feet) wide, buried by 60 metres (200 feet of overburden.

O. Berg (16)
O'Donnel River 104 N 11
1981, 1982 59° 31'N, 133° 13'W

This property is situated in the headwaters of O'Donnel River along a section formerly known as Feather Creek.

Mr. Berg mined in 1981, using a D7 bulldozer, and a P & H 312 excavator to mine. He continued work in 1982, and sluiced material through a narrow 6 metre (20 feet) long sluice box at a rate of approximately 75 cubic metres (100 cubic yards) per day.

Wright Creek (17)
A. Diduck 104 N 11
1980, 1981, 1982 59° 35'N, 133° 19'W

This property is situated along the headwaters of Wright Creek, just south of Idaho Peak.

Mr. Diduck began work on the property in 1980, when he and one helper mined using a D8H bulldozer and a 950 loader with 2 cubic metre (2.5 cubic yard) bucket. They continued work in 1981, and using the same equipment mined an area of approximately 1850 square metres (20,000 square feet). In 1982, they used the D8H bulldozer and a 966 loader with 3 cubic metre (4 cubic yard) bucket to mine, and sluiced approximately 150 cubic metres (200

cubic yards) of material per day through a 60 cm (24 inch) wide sluice box. The stripping ratio at the property is 3:1.

P. Matson (18)
Wright Creek 104 N 11
1981, 1982 59° 35'N, 133° 19'W

This property is situated along the right limit of the headwaters of Wright Creek, just southwest of Idaho Peak.

Mr. Matson mined alone at the property in 1981 and 1982, using a D7-17A bulldozer, and a sluice box with 15 cubic metre (20 cubic yard) per hour capacity. One settling pond was used to treat sluicing water.

L. Hodgson (19)
Wright Creek 104 N 11
1980, 1981 59° 35'N, 133° 20'W

This property is situated along the central portion of Wright Creek, just west of Idaho Peak. Surprise Resources Ltd. drilled the deposits, which are not frozen, in 1952, 1953, and 1954. The company also sank a shaft 43.9 metres (144 feet) deep, and completed a drift 12 metres (40 feet) to the east from the bottom of the shaft during 1954. A drift was driven 9.75 metres (32 feet) to the south from the 31.7 metre (104 foot) level of the shaft in 1956. The property was then inactive until 1981.

L. Hodgson began work in 1981 using a D3 bulldozer, and a backhoe with a .25 cubic metre (.38 cubic yard) bucket. He rebuilt the headframe, dewatered the shaft, and constructed a 1750 square metre (19,000 square feet) settling pond. In 1982, four people worked at the property. They mined underground, by drilling and blasting, and shovelled the gravel by hand into a tram car on tracks. Mining was done in 1.2 metre (4 foot) sets, 2.4 metres (8 feet) wide and 2.4 metres (8 feet) high.

Gold recovered from Wright Creek is reported to have a fineness of 802 to 814.

A. Knippel (20)
Otter Creek 104 N 11
1982 59° 35'N, 133° 23'W

This property is situated along the central portion of Otter Creek, east of Spruce Mountain.

Mr. Knippel worked at this property in 1982. His sluicing rate was approximately 115 cubic metres (150 cubic yards) per day.

Atlin Drain Lease (21)
R. Day 104 N 11
Otter Creek 59° 38'N, 133° 24'W
1979, 1980
1981, 1982

This property is situated on the right limit of Otter Creek, where it flows into Surprise Lake. There are several large areas of abandoned hydraulic workings on the thick glaciofluvial deposits at the mouth of the creek.

Four people worked at the property during 1979, using a D8 bulldozer, a loader with 2.3 cubic metre (3 cubic yard) bucket, and two 621 scraper-loaders with 15 cubic metre (20 cubic yard) capacity. They mined approximately 6500 cubic metres (8,500 cubic yards) of material, and processed approximately 3750 cubic metres (4,900 cubic yards) of material through a "Ross" sluice box. An old hydraulic mining cut was cleared in preparation for the 1980 season. In 1980, five people worked using the same equipment to mine low grade overburden, tailings, and some pay gravel. Three settling ponds of approximately 4000 square metres (43,000 square feet) each were constructed. Work in 1981 was done by six people on an old, eastern channel at the mouth of Otter Creek. A D8 bulldozer, 950 loader with 2.7 cubic metre (3.5 cubic yard) bucket, two 621 scraper-loaders with 15 cubic metre (20 cubic yard) capacity, and a P & H backhoe with 1 cubic metre (1.25 cubic yard) bucket were used, along with a sluice box 1.2 metres (4 feet) wide and 22 metres (72 feet) long. The same equipment was used in 1982, when six people worked at the site. The stripping ratio in 1982 was 7:1, and the sluicing rate was approximately 600 cubic metres (800 cubic yards) per day.

Gold from Otter Creek is reported to have a fineness of 807 to 812.

R. McIntyre (22)
Wright Creek 104 N 11
1981, 1982 59° 38'N, 133° 21'W

This property is situated at the mouth of Wright Creek, on the south shore of Surprise Lake. There are abandoned hydraulic workings in the area, and thick deposits of glaciofluvial gravel are present at the mouth of the creek.

Work was done at this property in 1981, and may have been done in 1980 and 1979. Work continued in 1982, when the stripping ratio was reported to be 6:1, and the sluicing rate was reported to be approximately 900 cubic metres (1,200 cubic yards) per day.

T. Sandor (23)
Ruby Creek 104 N 11
1979, 1980 59° 40'N, 133° 20'W
1981, 1982

This property is situated along Ruby Creek near its mouth. Glaciofluvial gravel at the site is overlain by a 3 to 7.5 metre (10 to 25 feet) thick capping of post-glacial lava. Ruby Creek has cut through the lava, and partially reworked the glaciofluvial deposits.

T. Sandor and one helper began work at this property in 1979 using a Case 580 backhoe. Work continued in 1980, when underground mining of gravel below the lava was done. In 1981, two people worked in the creek valley, using a D7E bulldozer, a Case W-12 loader with 1.1 cubic metre (1.5 cubic yard) bucket, and backhoe with .6 cubic metre (.75 cubic yard) bucket. The material mined was sluiced through a metre (3 feet) wide sluice box 12 metres (40 feet) long with a capacity of 500 cubic metres (650 cubic

yards) per day. One settling pond was used to treat sluicing water. Work continued in the creek valley in 1982, with two people employed for one part of the season, and four people employed for the other part. They worked with the same equipment as in 1981, and mined an area with a stripping ratio of 2:1. The material mined was fed through a trommel, which removed coarse pebbles, cobbles, and boulders from the gravel prior to sluicing. Sluicing water was treated in two settling ponds.

View of the T. Sandor mining operation on Ruby Creek. The steep walls of the valley, and the large size of some of the boulders encountered in the gravel are noticeable.

J. Florence (24)
Ruby Creek 104 N 11
1982 59° 40'N, 133° 20'W

This property is situated on a high bank along the left limit of Ruby Creek, approximately 2.5 km (1.6 miles) from its mouth. Deposits at the site contain many large boulders.

Work on this previously unmined property was begun by J. Florence and two helpers in August, 1982. They used a loader with 1.9 cubic metre (2.5 cubic yard) bucket, and a backhoe with .4 cubic metre (.5 cubic yard) bucket, and mined approximately 20 cubic metres (25 cubic yards) of material per day. The material mined was processed through a small sluice box. One settling pond was used to treat the sluicing water.

W. Boyko (25)
Orion Construction Ltd. 104 N 11
Boulder Creek 59° 39'N, 133° 25'W
1980, 1981, 1982

This property is situated along the middle portion of Boulder Creek, approximately 3.5 km (2.2 miles) above its mouth.

Work was begun in 1980 by W. Boyko, who worked with a 977H loader and sluice with grizzly, and gravity-fed water supply, to test the deposits at the site. Orion Construction Ltd. worked on the property in 1981, using a D8 bulldozer, a JD 350 tracked loader, a 966 loader with 3 cubic metre (4 cubic yard) bucket, and a 690 backhoe with .6 cubic metre (.75 cubic yard) bucket to mine a large cut along the left limit. The cut was approximately 300 metres (1,000 feet) long and 45 metres (150 feet) wide. Orion Construction Ltd. continued work with five employees in 1982, using the same equipment as in 1981 plus a Case 750 tracked loader. The stripping ratio of the area along the right limit mined during the year was approximately 2:1. The sluice box used was 1.2 metres (4 feet) wide and 7.3 metres (24 feet) long. It had a grizzly to remove cobbles and boulders prior to sluicing. Three settling ponds were used to treat the sluicing water.

Decourcey Mining Co. Ltd. (26)
Boulder Creek 104 N 11
1981, 1982 59° 39'N, 133° 25'W

This property is situated along the left limit of the central portion of Boulder Creek, approximately 3.2 km (3 miles) above its mouth.

Decourcey Mining Co. Ltd. proposed mining operations for this property in both 1981 and 1982, but there is no indication that any mining was done. The 1981 plan involved three or four employees, a D8 bulldozer, and a 966C loader, while the 1982 plan involved two or three employees, a D7 bulldozer, an International TD-15 tracked loader, and a 966 loader.

A. Knippel (27)
M. Goulding 104 N 11
Boulder Creek 59° 39'N, 133° 25'W
1981, 1982

This property is situated along the right limit of Boulder Creek, approximately 1.8 km (1.1 miles) above its mouth.

Messrs. A. Knippel and M. Goulding mined at this site in 1981, but in 1982 Mr. Knippel mined on Otter Creek while Mr. Goulding continued work on Boulder Creek. In 1982, three people worked using a D8 bulldozer, a 944 and a 950 loader, and a P & H backhoe with .6 cubic metre (.75 cubic yard) bucket. The stripping ratio was 2:1. Sluicing was done intermittently depending upon the availability of gravity fed water, but when done, it was at a rate of approximately 150 cubic metres (200 cubic yards) of material per day. Two settling ponds were used to treat sluicing water. Approximately 16,000 cubic metres (21,000 cubic yards) of material were sluiced in 1982.

D. Berry (28)
Boulder Creek 104 N 11
1980 59° 39'N, 133° 24'W

This property is situated along the easternmost channel crossing the delta at the mouth of Boulder Creek.

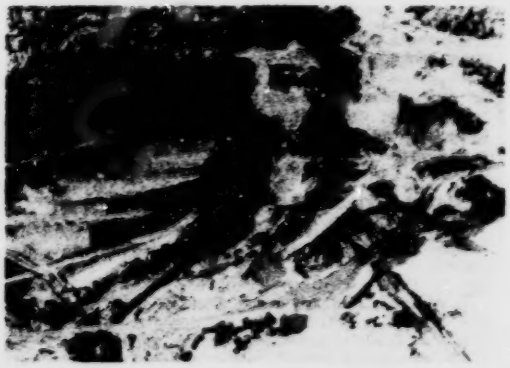
Deposits in the area are tailings from old hydraulic mining operations.

D. Berry worked at this property in 1980, using a D8 bulldozer and a 966 loader.

A. Michie (29)
Boulder Creek 104 N 11
1982 59° 38'N, 133° 24'W

This property is situated along the right limit of the westernmost channel crossing the delta at the mouth of Boulder Creek. Deposits in the area consist of glaciofluvial gravel, and tailings from old hydraulic mining operations.

Four people worked at this site in 1982, using two D8 bulldozers to mine, and a Lebherr backhoe with 3.5 cubic metre (4.5 cubic yard) bucket to load two 16.5 cubic metre (21.5 cubic yard) Euclid trucks which hauled material to the sluice box. The sluice box, with mechanized screening plant to remove cobbles and boulders prior to sluicing, had a capacity of 600 cubic metres (800 cubic yards) per day. It was fed by a 966 loader. Approximately 90,000 cubic metres (118,000 cubic yards) of material were sluiced during 1982. Sluicing water was treated in two large settling ponds.



View of A. Michie operation at the mouth of Boulder Creek. The screening unit and sluice box are visible at the right of the picture.

A. Olson (30)
Birch Creek 104 N 11
1981 59° 39'N, 133° 30'W

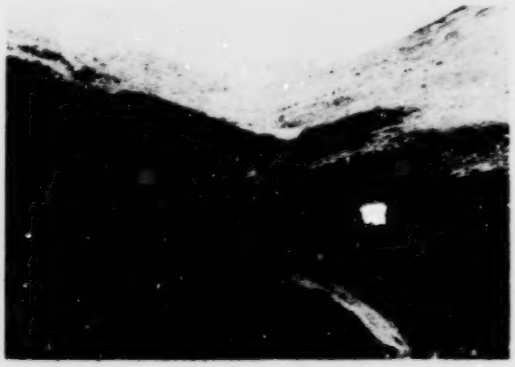
This property is situated along the headwaters of Birch Creek. The flow rate of Birch Creek at this site is very low during parts of the summer.

A. Olson mined at this location during 1981 using a backhoe. Water for sluicing was gravity fed.

C. Schmidt (31)
Birch Creek 104 N 11
1982 59° 38'N, 133° 30'W

This property is situated along the right limit of the central portion of Birch Creek.

Two people worked at this property during 1982, using a D8H bulldozer and a 950 loader. They mined approximately 150 cubic metres (200 cubic yards) of material per day. Water for sluicing was gravity fed. Two settling ponds were used to treat the sluicing water.



Tailings from bulldozer mining operations along the central portion of Birch Creek.

A. Ellis (32)
Birch Creek 104 N 11
1979, 1980 59° 38'N, 133° 29'W
1981, 1982

This property is situated along the middle reaches of Birch Creek, approximately 3.5 km (2.2 miles) upstream from its confluence with Pine Creek. Deposits at the site are of pre-glacial gravel overlain by glacial sand and gravel.

Work on this property began in 1979. It continued in 1980, when three cuts of approximately 2,500 square metres (27,000 square feet) each were mined using a D9 bulldozer, and a 950 loader with 2 cubic metre (2.5 cubic yard) bucket. Two people continued work at the site in 1981, and used the same equipment to mine an additional three cuts of approximately 3,750 square metres (40,000 square feet) each. Sluicing water was treated in three settling ponds of 1,000 square metres (10,750 square feet) each. The same equipment was again used by two people in 1982, when four cuts of approximately 2,000 square metres (21,500) square feet) each were mined. Water for sluicing was gravity fed, and was available only intermittently. When water was available, approximately 200 cubic metres (260 cubic yards) of material were sluiced per day.

R. Foisy **(33)**
Birch Creek **104 N 11**
1980, 1981, 1982 **59° 37'N, 133° 29'W**

This property is situated along Birch Creek approximately 2.6 km (1.6 miles) upstream from its confluence with Pine Creek. The area is flat, and very well drained. The flow from Birch Creek disappears underground at about this point during some parts of the year.

Work at this site began in 1980, when two people worked with a Hough tracked loader with .75 cubic metre (1 cubic yard) bucket, and a 955L loader with 1.5 cubic metre (2 cubic yard) bucket. Mining continued in 1981 and 1982, with two people using the same equipment in 1981, and the 955L loader along with a Hough 50B loader, plus a D8 bulldozer for stripping in 1982. Approximately 8,000 cubic metres (10,500 cubic yards) of material were mined in 1982. Sluicing was done at a rate of 150 cubic metres (200 cubic yards) per day. Two small settling ponds were used to treat sluicing the water.

D. Thachuk **(34)**
Pine Creek **104 N 12**
1979, 1980 **59° 35'N, 133° 32'W**
1981, 1982

This property is situated south of Pine Creek, and approximately 1.5 km (1 mile) east of the abandoned town of Discovery. Deposits in the area consist of 9 metres (30 feet) or more of glaciofluvial gravel and till, which overlie a few metres (feet) of gravel preserved in a pre-glacial course of Pine Creek called Gold Run Creek.

Work was done on the property in 1979, and may also have been done in 1978. In 1980, an area of approximately 7,500 square metres (80,000 square feet) was mined using a D8 and a D9 bulldozer, a rubber-tired 824 bulldozer, a backhoe with .75 cubic metre (1 cubic yard) bucket, and a dragline with 1.9 cubic metre (2.5 cubic yard) capacity. Sluicing water was treated in four settling ponds. Five people worked during 1981, using the same equipment as in 1980. They mined an area of approximately 14,000 square metres (150,000 square feet), and processed approximately 800 cubic metres (1,050 cubic yards) of material per day through a sluice box 100 cm (40 inches) wide and 21 metres (70 feet) long. Five people again worked using the same equipment in 1982 as in 1981. Approximately 48,000 cubic metres (63,000 cubic yards) of material were processed in 1982.

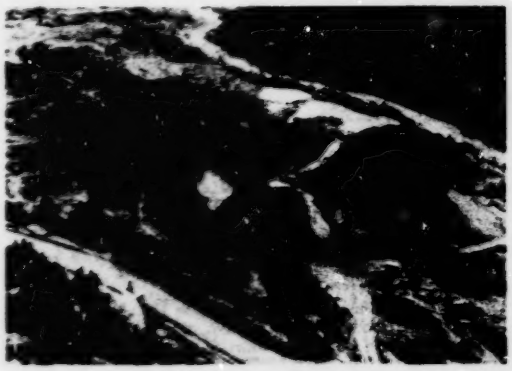
Coarse pebbles, cobbles, and boulders were removed prior to sluicing by a mechanized screening plant. Sluicing water was treated in three settling ponds. The stripping ratio at the property was 5:1.

G. Yardley **(35)**
Pine Creek **104 N 12**
1979, 1980 **59° 35'N, 133° 33'W**
1981, 1982

This property is situated along the right limit of Pine Creek, just upstream from the abandoned town of Discovery. Deposits in the area consist of abundant tailings from former mining operations in the centre of the valley, and glaciofluvial gravels 6 metres (20 feet) or more thick along the margin of the old workings. Thin pockets of pre-glacial gravel may be preserved under the glaciofluvial deposits.

Work was done at this site in 1979, and may also have been done in 1978. A D8H bulldozer and a 966 loader were used to mine an area of approximately 2,750 square metres (30,000 square feet) in 1979. The D8H bulldozer, a 920 loader with 1.5 cubic metre (2 cubic yard) bucket, a 966 loader with 3 cubic metre (4 cubic yard) bucket, and a 631B scraper-loader with 19 cubic metre (25 cubic yard) capacity were used in 1980. The same equipment was used by 3 people in 1981 to mine an area of old tailings of approximately 7,000 square metres (75,000 square feet). Three people worked in 1982 with the D8H, a 950 loader, and two 631B scraper-loaders. They mined a pit 25 metres (80 feet) wide by 60 metres (200 feet) long in a previously unmined area along the margin of the old workings, plus old tailings, and sluiced approximatley 60,000 cubic metres (78,000 cubic yards) of material at a rate of 600 cubic metres (780 cubic yards) per day.

Gold from Pine Creek is reported to have a fineness of 806 to 818.



View of G. Yardley operation along the right limit of Pine Creek. The cut mined in 1982 is at centre right in the photograph. Two settling ponds lie between the cut and the creek. Tailings from former mining operations are visible in the background.

A. DeAngelis **(36)**
Pine Creek **104 N 12**
1981, 1982 **59° 35'N, 133° 33'W**

This property is situated along the left limit of Pine Creek, opposite the abandoned town of Discovery. The broad Pine Creek valley is filled with tailings from former mining operations in this area.

Work was done on this property in 1981 and 1982, and may have been done in earlier years. In 1981, three people worked a 950 loader with 2.3 cubic metre (3 cubic yard) bucket, and a Case 680 backhoe, and mined seven small

cuts in old tailings. The material mined was processed through a 7 metre (23 feet) long sluice box with a capacity of 150 cubic metres (200 cubic yards) per day. Two people worked with the same equipment in 1982. They mined and processed approximately 20,000 cubic metres (26,000 cubic yards) of material. Water from sluicing was treated in two settling ponds.

J. James (37)
T. Matson 104 N 12
Pine Creek 59° 35'N, 133° 34'W
1978, 1979
1980, 1981, 1982

This property is situated along the left limit of Pine Creek, just downstream from the abandoned town of Discovery.

Work was carried out on this property in 1978, 1979, and 1980 by J. James who prospected, and sluiced a limited amount of material in a hand-fed sluice box. In 1981, T. Matson began work on the property during August, using a D7 bulldozer and sluice box with 25 cubic metre (33 cubic yard) per hour capacity. He worked for three weeks in 1982, using the D7 bulldozer and a drag-line with 1.1 cubic metre (1.5 cubic yard) capacity. Approximately 5,000 cubic metres (6,500 cubic yards) of old tailings were mined and sluiced in 1982. Sluicing water was treated in two settling ponds.

E. Husselbee (38)
Pine Creek 104 N 12
1980 59° 35'N, 133° 35'W

This property is located along the right limit of Pine Creek, approximately 1.3 km (.8 miles) downstream from the abandoned town of Discovery. Deposits mined were tailings from former dragline mining operations.

Work was done on the property in 1980 using a Case 850 tracked loader with .75 cubic metre (1 cubic yard) bucket, an Allis Chalmers loader with 1.5 cubic metre (2 cubic yard) bucket, and a backhoe with .6 cubic metre (.75 cubic yard) bucket. An area of approximately 3,000 square metres (32,000 square feet) was mined. Two settling ponds were used to treat sluicing water.

D. Budinski (39)
Fourth of July Creek 104 N 12
1982 59° 41'N, 133° 37'W

This property is situated along the left limited of Fourth of July Creek, approximately 750 metres (2,500 feet) downstream from Lower McDonald Lake.

D. Budinski used a small backhoe and sluice to do test work at this site in 1982. His sluicing rate during the work was approximately 20 cubic metres (26 cubic yards) of material per day.

Border Mining (1)
C. Ross 114 P 14
Squaw (Dollis) Creek 60° 00'N, 137° 06'W
1981, 1982

This property is situated on Squaw Creek, a tributary of the Tatshenshini River, immediately south of the Yukon -British Columbia border. Other mining operations on this creek are located in Yukon.

Border Mining was active at the property in 1981 and 1982, and may have worked there prior to 1981. Work in 1981 was done along the right limit of the creek with a D7 and D8 bulldozer, and two 988 loaders with 4.5 cubic metre (6 cubic yard) buckets. Material mined was processed in a sluice box having a capacity of 75 cubic metres (100 cubic yards) per hour. Work in 1982 was done with a D7 and a D9 bulldozer, a 988 loader, and a 690B backhoe. A sluice box with a capacity of 230 cubic metres (300 cubic yards) per hour was used to process the material mined. Six people worked for Border Mining in 1982. C. Ross worked on the same property on his own behalf in 1982, using a 980 loader.

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PLACER LEGISLATION AND REGULATIONS

Jurisdiction: Provincial

Staking Regulations: Placer dispositions in British Columbia are known as leases. Leases may be staked by any person holding a valid "free miners" license, one must be 18 years of age or older, and a Canadian citizen or a landed immigrant who has been a resident of Canada for less than 8 years.

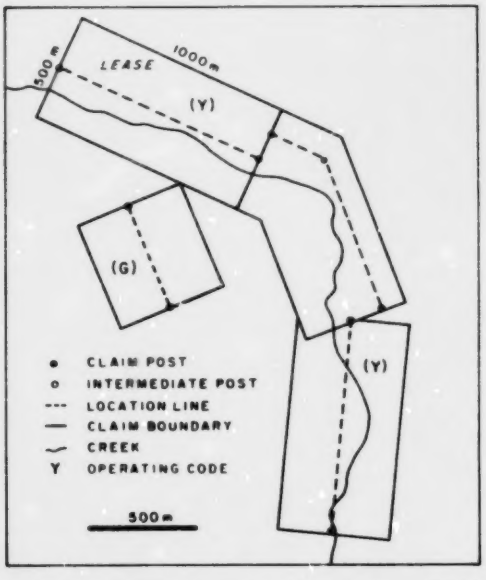

Figure 1: Example of typical placer leases in British Columbia.

Placer leases may be staked only within designated placer areas. Application may be made to the Chief Gold Commissioner to have areas not currently designated become designated, but such application does not guarantee designation.

Placer leases are up to 1,000 m long, and 500 m wide. They may be staked in any direction, but most commonly are staked with the long axis along a creek bed. The location line is marked by initial and final posts inscribed with specified information, and must be blazed and otherwise well marked along its length. One change of direction, not exceeding 90°, is allowed in the location line. It must be marked by an intermediate post. Placer tags must be purchased prior to staking, and affixed to the initial and final posts at the time of staking.

Stakers have 30 days in which to record their leases. Leases may be recorded at any Sub-Recorder's or any Gold Commissioner's office. Two leases may be staked by the holder of a free miner's license during a calendar year.

Assessment work totalling $250.00 per year for each placer lease must be carried out. In addition, an annual rental fee of $50.00 must be paid for each placer lease.

Regulations Governing Mining: Regulations of the British Columbia Ministry of Forests, Ministry of Energy Mines and Petroleum Resources, and Ministry of Environment, and the federal Department of Fisheries and Oceans all apply to placer mines in British Columbia.

Where mining affects forest resources a Free-Use permit may be granted by the Ministry of Forests.

The interests of the provincial Waste Management and Fish and Wildlife Branches and the federal Department of Fisheries and Oceans are protected by the colour coding system which designates the environmental sensitivity and operating criteria of individual placer leases. Each lease is given a green, yellow, or red coding before it is granted. The coding indicates which restrictions on mining, tailings disposal, and waste-water treatment apply on that lease.

The approval of the Water Management Branch of the Ministry of Environment is required for water use by any operation larger than a hand operation. The cost of water use is $100.00 for each cubic foot or part thereof per second. Permanent structures such as dams, bridges, culverts, or holding ponds require separate approval.

The Inspection and Engineering Branch of the Ministry of Energy, Mines and Petroleum Resources requires submission of a notice of

work and a reclamation program approval must be granted prior to commencement of work. Operations using mechanical equipment must post a reclamation bond prior to the commencement of work. Required authorizations granted by other agencies are not issued until the reclamation bond is paid.

Further information may be obtained from district offices of the agencies named, or from:

Chief Gold Commissioner,
Ministry of Energy, Mines and
Petroleum Resources
Parliament Buildings
Victoria, B.C.
V8V 1X4

and from:

Comptroller of Water Rights
Ministry of Environment
Parliament Buildings
Victoria, B.C.
V8V 1X4

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